have been amended. Claims 30-35 have been added. These actions have been taken to more definitively claims the invention.

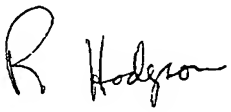
Claims 1 and 26 have been amended to add a limitation of a recording of the offset O_r. Support for this change is found in the specification and in claim 22. Claim 22 has been amended to make it independent by incorporating all limitations of its parent claim(s). Note that claim 22 has not been narrowed by this action. Claims 23 -25, dependent on claim 22, have been changed to reflect the changed lettering of the claim elements. New claims 30- 35 are old claims 16-21 made dependent on claim 22 instead of claim 15.

The amended claims, with deletions bracketed and additions underlined, are appended at the end of this response and amendment .

No additional fee is required, since the number of added claims is less than the number of canceled claims. The required fees and any insufficiency or overage (except issue fees) may be debited or credited to deposit account 08/2240. A signed deposit account authorization is on file for this case.

On the basis of the above amendments and remarks, consideration of this application and its early allowance is respectfully requested.

Respectfully,



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34 Appendix... marked up copies of amended claims.

1 1. (amended) An apparatus, comprising:

2 a monolithic device, the monolithic device comprising;

3 a first CMOS imaging array; and

4 a dark current monitoring device integrated with the first CMOS imaging array, the dark
5 current monitoring device monitoring the dark current during the time that the
6 first CMOS imaging array is receiving an image; and

7 a recording of offset signals O_1; the ofset signals O_1 recorded by exposing the first CMOS
8 image array for a time t_1, where t_1 is a short enough time that dark current and projected light
9 produced signals are small compared to offset signals in pixels of the first CMOS array.

1 22. (amended) [The method of claim 15, further comprising;] A method of recording an image
2 of an object using light reflected or transilluminated from the object, comprising;

3 a)forming an image of the object on a first CMOS image array by projecting the light reflected or
4 transilluminated from the object on to the first CMOS image array, the first CMOS
5 image array formed on a monolithic semiconductor substrate; and

6 b) monitoring the dark current of the first CMOS image array with at least one dark current
7 monitoring device integrated with the first CMOS imaging array on the monolithic
8 semiconductor substrate, the monitoring of the dark current concurrent with the forming
9 of the image;

[a]c) exposing the first CMOS image array for a time t_s, where t_s is a short enough time that dark current and projected light produce signals small compared to offset signals in pixels of the first CMOS array; and then

[b]d) recording the offset signals O_i measured as a result of exposure for time t_s; and then

[c]e) subtracting O_i from signals produced by the first CMOS image array when exposure times are long enough that dark current signals are not small compared with O_i.

23. (amended) The method of claim 22, wherein the dark current signals of step c) are produced from an unilluminated first CMOS image array, and further comprising;

[d]f) recording signals $S_d = G_i(f_i(T, t))$ which result from step [c]e).

24. (amended) The method of claim 23, further comprising;

[e]g) projecting light from a uniformly reflecting extended object on to the first CMOS array, the light intensity high enough that dark current signals are small compared to signals produced by the light illumination; and

[f]h) recording signals $S_i = G_i(k_i I_i R_i QE_i) + O_i$ from the first CMOS array produced by light projected from the uniformly reflecting object; then

[g]i) subtracting O_i from the results of step f);

[h]j) recording an effective gain coefficient $G_i^* = G_i(k_i I_i QE_i)$.

25. (amended) The method of claim 24, wherein;

the step of forming an image of the object comprises recording signals

$S_i = G_i * R_i + O_i + G_i f_i(T, t)$ from the first CMOS array; further comprising;

[i]k) correcting the recorded values S_d to calculate $G_i f_i(T, t)$, wherein the results of the step of monitoring the dark current are used to correct the recorded values S_d; and

[h]l) calculating R_i from the known values of S_i, G_i*, O_i and $G_i f_i(T, t)$.

26. (amended) A system, comprising:

a monolithic device, the monolithic device comprising;

a first CMOS imaging array; and

a dark current monitoring device integrated with the first CMOS imaging array, the dark current monitoring device monitoring dark current concurrently with the recording of an image by the first CMOS imaging array;

a recording of offset signals O_i; the ofset signals O_i recorded by exposing the first CMOS image array for a time t_o, where t_o is a short enough time that dark current and projected light produced signals are small compared to offset signals in pixels of the first CMOS array;

an optical system for imaging light reflected or transilluminated from an object on to the first CMOS imaging array; and

circuitry for correcting the output from the first monolithic CMOS image array to account for the dark current monitored by the dark current monitoring device.